Catching-up with the west in economic development: the case of Malaysia

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Abstract

Using a geometric growth model this paper shows that, given certain assumptions, the target of reaching an annual GNP per capita equal to US $ 10,000 which Vision 2020 considers adequate for acquiring a fully developed nation's status by that year may remains attainable despite the recent currency turmoil. The real difficulty is that the minimum income level that the World Bank sets to separate the developed (High Income) countries from others is increased by about 4.3% each year. If we incorporate this variation, as we should, in the model, catching up with the West becomes a far cry for most of the developing countries including Malaysia. In fact, being in that race, may cause more harm than good to the socio-economic fabric of these countries.

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1. INTRODUCTION

Economic development has been the main *raison d'etre* of social organization for most of human history. However, the subject acquired distinctive significance only after the Second World War when vast tracts of the globe won their freedom from the colonial rule. The political leadership of the newly independent countries, largely constituting the Third World, naturally had a rather compulsive urge to relieve the masses from the centuries long deprivations and grinding poverty. Independence had fired up people's expectation. Aliens were no longer responsible for their miseries. Action had to be taken.

The desire for development resulted over time and space, in the proliferation of planning models with varying objectives, priorities, strategies and ideological shades[1]. An important undercurrent of the development thought was the ambition to catch up with the West: to reach their living standards, their life styles. It was not that attention was not drawn to the difficulties of the path. Hla Myint, a recognised authority in the area of development economics, warned in early sixties that despite developing countries achieving higher growth rates in GNP per capita catching up with the West may not be easy due to enormous differences in the initial incomes, the basis of calculations[2]. A vast amount of literature has since become available on the catching-up theory, debating both the tenability and the efficacy of its underlying policy prescriptions. Nevertheless, the desire to 'catch up' continues to find expression intermittently.

A case in point is Malaysia's Vision 2020 where it finds expression in the aim of raising the country to the level of a fully developed nation by that year[3]. Initiated in 1990, the programme took little time to pick up pace. Indeed, few developing countries other than Malaysia have recently been able to see the catching up destination within their sight. Malaysia enjoys uninterrupted political stability and has been able to maintain high growth rates in GNP with low inflation since the close of eighties. The per capita income rose sharply from US$1810 in 1987 to US$3890 in 1995[4].During the same period, the country moved up from the lower to upper middle-income classification and its income rank rose from 73 to 99 in a set of 133 nations in the World Development Reports (WDRs).Output per capita in real terms has grown at a high rate of 4.35% per annum during 1971-92 i.e. for over two decades[5]. The high performance of the economy kept the nation coming off well in its 'catching up' race. However, in view of the present financial markets turmoil one must pause and assess seriously the possibilities of reaching the cherished destination. This paper attempts to do that in an objective setting. Many questions arise. Is the time frame still reasonable? What changes, if any, are needed? Or, are there better goals to pursue? These and the like are the issues worth considering.

The paper has six sections. The following section presents a brief overview of the literature on the subject. In Section 3, we explain the reasons why GNP per capita is invariably used as a gap measure index. Section 4 sets up a simple catching up model based on geometric growth principle. In section 5, we use variants of the model to look at

the Malaysian case from several angles. The closing section makes some observations on the efficacy of Malaysia remaining in the catching up race.

2. LITERATURE OVERVIEW

The essence of the catching up theorem is seen in the technological distance between the followers and the leaders, which the former, to be successful, must cover on the road to industrialization[6]. The postulate first emerged as a tool for rationalizing the late but rapid industrialization of the continental economies in the nineteenth century.[7] More recently, economic historians have focused their attention on the successful, though uneven, catching up process among the OCED countries.[8] The point which is frequently made is that advanced (industrialized/developed) economies have grown, and continue to grow, by virtue of innovative activity, while those coming behind can, and largely do, rely on imitation and absorption. The process reduces in good measure the latter's expenditure on research and development, an advantage of being late.[9] International trade is viewed as the pipeline through which technology flows from the advanced to the developing nations.[10] The catching up theorem, therefore, predicts that, *ceteris paribus*, the higher is the degree of trade liberalization, the faster will be the process of technology diffusion. This will lead, it is argued, to the convergence of various economies - developed and developing - with reference to their GNP per capita, and may eventually help the followers to catch up with the leaders.[11] The question is: how far facts support the prediction?

The empirical evidence on the point is inconclusive, even conflicting.[12] Details of this evidence are not relevant here. But it is well to *make* a distinction. Convergence signifies a *process* of which catching up may or may not be the *end* result within a desired period. For studying convergence, the usual stochastic econometric models regress growth in GNP per capita on the main determinants of growth - investment rates, and the stock of human capital - in addition to the initial level of income. Based on cross-country data, these models find weak and conditional convergence occurring because of technology spillages. Such models, essentially dealing with a long-run tendency, are not efficacious to investigate if a particular country can catch up with a target, given a time frame, or alternatively what changes in relevant variables are needed for the purpose. Here, the difference between the initial income levels becomes dominant, given the growth rates of the respective GNPs and populations. Probably, more suitable for the purpose is the sort of model we use in Section 4 below. To anticipate, we are to evaluate the possibilities of Malaysia entering into a *generic* group of countries with an ever-changing composition.

It is well to mention in the present context that the dominant feature of the modern economic history is divergence in income per capita, not convergence. "By one estimate, the ratio of income per capita in the richest to the poorest countries has increased from eleven in 1870 to thirty-eight in 1960, and to fifty-two in 1985. This divergent relation between growth performance and the initial level of income per capita not only applies to those extreme cases but is empirically valid on average over a sample of 117 countries".[13] However, there can be departures from the general tendency.

3. THE CRITERION

Let us start with the basic question: what exactly is meant by Malaysia attaining a developed nation's status? There are many dimensions of the objective - political, social, economic and ethical. Their description is elaborate and impressive in the literature on Vision 2020, but there is no index combining them all in a quantitative entity to permit measurement for comparisons over time and space. The vision uses GNP per capita as a proxy for such index[14]. One factor supportive of the replacement is the close and significant correlation we find between GNP per capita and the Human Development Index at several points of time using cross sectional data available in the UNDP reports[15]. This is all the more appropriate because there is no formally recognised line of demarcation between the developed and the developing economies[16]. Significantly, the regular tables providing data in the WDRs do not use the classification. Instead, the category identification for countries relies on per capita GNP as the basis. The economies considered as developed fall in the `High Income' category, though the reverse is not always true[17].Lastly, even if we are somehow able to construct a composite index for measuring development, as conceived in the Vision 2020, we may not be able to do the same for other economies to make comparisons.

So, we settle for GNP per capita as our measurement criterion in the context of the `catching up theorem'. Here the problem is that the GNP expressed in each country's own currency cannot be used for purposes of comparison. We have to fall back on the relevant data as published in the WDRs that use US dollars as common denominator for all the GNP and related data. This brings in the question of methodology used for estimation. For the WDRs Gross national product (GNP) is the sum of gross value added by all resident producers plus any taxes (less subsidies) that are not included in the valuation of output, plus net receipt of primary income (employees compensation and property income) from non-resident sources divided by the mid-year population and converted to US dollars using the World Bank Atlas method. In most cases, the conversion factor for any year is the average of a country's exchange rate for that year and its exchange rates for the two preceding years after adjusting them for differences in relative inflation between the country in question and the G-5 countries (France, Germany, Japan, the United Kingdom, and the United States). The inflation rate in the latter is represented by changes in the SDR deflators. This three-year averaging smoothens annual fluctuations in prices and exchange rates for the country in question[18]. Thus, the reported figures of GNP per head are at a sort of constant prices[19].

The Vision conceives of a developed nation's status in terms of reaching a GNP per capita equivalent to U.S. $ 10000 by 2020. The view clearly is *static*.

4. THE MODEL

Making predictions is hazardous as it invariably rests on assumptions that may or may not turn out to be true. Yet, predictive exercises are, at times, undertaken. The model we construct below for our purposes assumes as under:

(i) That the rates of growth in GNP and population remain unchanged both for Malaysia and the 'catching up' target.
(ii) That the rates of inflation for the two entities remain equal over the relevant period.
(iii) That the course of economic events does not experience any major disturbances.
(iv) That the rates of exchange between relevant currencies remain unchanged during the possible 'catch up' period[20].

These assumptions sum up the main *conditions* for *convergence* and eventual *attainment* of the target. To fix up things we shall use the logarithmic transformation of the geometric growth rate equation

$$X_n = X_o (1 + r)^n$$

Which is

$$\text{Log } X_n = a + nb$$

In these equations X is the variable, n is the number of time units, X_n and X_o are respectively the end and beginning period values of the variable, r is the rate of change per unit in variable X, and $a = \log X_o$ and $b = \log (1 + r)$ are parameters. Now, for the catching up theorem we may set up:

$$Y_n = Y_o (1 + r_g)^n \qquad \text{(i)}$$

And

$$P_n = P_o (1 + r_p)^n \qquad \text{(ii)}$$

Where Y is GNP and P is population, while r_g and r_p are their respective rates of growth, and n is the number of years. Dividing equation (i) by equation (ii) we have:

$$Y_n/P_n = Y_o (1 + r_g)^n / P_o (1 + r_p)^n \qquad \text{(iii)}$$

as the equation for the value of GNP per capita after n years. We may write

$$Y_n = Y_o (1 + r_g)^n / (1 + r_p)^n \qquad \text{(iv)}$$

For Malaysia, this equation is identified as

$$Y_{nM} = Y_{oM} (1 + r_{gM})^n / (1 + r_{pM})^n \qquad \text{(v)}$$

and for the catching up target C as

$$Y_{nC} = Y_{oC} (1 + r_{gC})^n / (1 + r_{pC})^n \qquad \text{(vi)}$$

If after n years Malaysia M aims to or can catch up with C in terms of per capita income, then

$$Y_{nC} - Y_{nM} = 0 \qquad \text{(vii)}$$

Combining equations (v) and (vi) we set up:

$$Y_{oM} (1 + r_{gM})^n / (1 + r_{pM})^n = Y_{oC} (1 + r_{gC})^n / (1 + r_{pC})^n \qquad \text{(viii)}$$

Using logarithmic transformation, and rearranging terms we have:

$$n = (a_C - a_M) / [(b_{gM} - b_{pM}) - (b_{gC} - b_{pC})] \qquad \text{(ix)}$$

Where $a_C = \log Y_{oC}$ $a_M = \log Y_{oM}$

$b_{gC} = \log (1 + r_{gC})$ $b_{gM} = \log (1 + r_{gM})$

$b_{pC} = \log (1 + r_{pC})$ $b_{pM} = \log (1 + r_{pM})$

To enter the `High Income' group Malaysia's GNP per capita must equal US $9386, the demarcation income level for 1995. Her GNP per capita grew at an average annual rate of 5.7% during 1990 - 95 at constant prices (1987 = 100). The population of the country during the same period increased at an average annual rate of 2.4%. The corresponding rates for `High Income' economies, taken together, have been 1.9% and 0.7% respectively. However, for our model we require growth rates for aggregate GNP. Using the formula $r_g = (1 + r_P)(1 + r_{gy}) - 1$, we obtain these rates as equal to 8.2% for Malaysia, and 2.6% for C the `High Income' category. Thus for the model set up in equation (ix), we have:

Y_{oC} = US $ 9386 Y_{oM} = US $ 3890

$r_{gC} = 0.026$ $r_{gM} = 0.082$

$r_{pC} = 0.007$ $r_{pM} = 0.024$

5. APPLICATIONS

Putting the above values in equation (viii) and using logarithmic transformation (equation ix), we get

$$N = 25$$

An alternative method is to use logarithmic transformation of equations (v) and (vi) as separate growth functions. Simplifying these equations for given values we have:

$$\text{Log } Y_{om} = 3.5899 + 0.0239n \qquad \text{(x)}$$

And $$\log Y_{nC} = 3.9725 + 0.0081n \qquad \text{(xi)}$$

We can construct a semi-log schematic diagram based on these growth functions as in Fig. 1. The point of intersection of the two lines gives us the number of years (n) Malaysia would need to catch up with the `High Income' group as also the level of real

GNP per capita, $Y_{om} = S_{ync}$. An additional point the diagram brings out is that the income target Vision 2020 puts at US $ 10000, will take only about 17 years to achieve. Thus, even if the rate of GNP growth reduces to around 7% per annum due to current turmoil in the financial markets the target remains attainable.

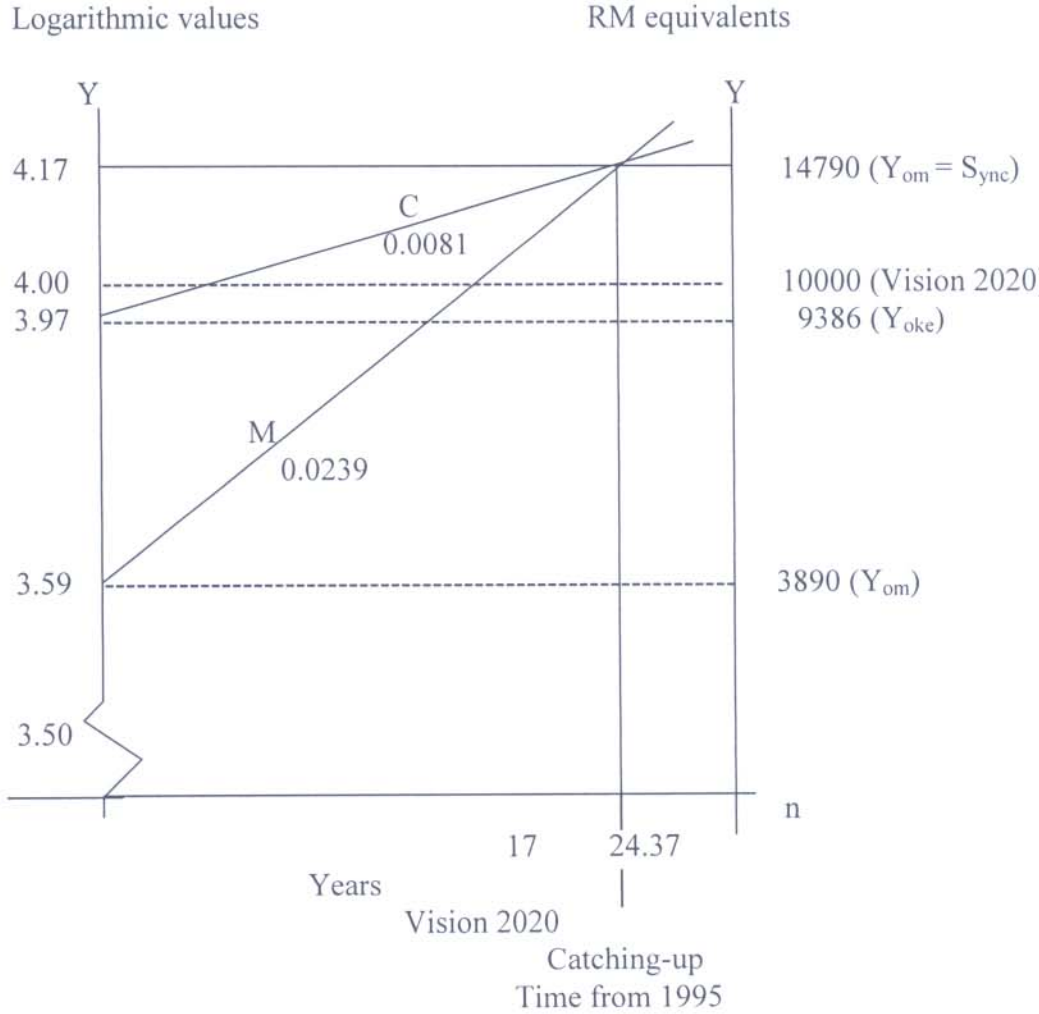

Fig. 1 Semi-log linear functions depicting the catching-up Possibilities for Malaysia

It comes about that counting 25 years from 1995, the estimation point, Malaysia may be knocking at the door of the `High Income' club just in time i.e. in the year 2020. Malaysian plans look realistic, though our assumption is quite stringent. However, there is a catch in this analysis. It is valid if we are in pursuit of a *fixed* target, but not if we are in a *race*[21]. Notice that our model has not taken note of one important fact. The World Development Report raises the per capita GNP limit each year to enter the group, for which it does not provide any reason or basis. For example, the limit was US $ 7620 in 1990 but it climbed up to US $ 9386 in 1995. To be realistic, the model must accommodate the fact of an ever-advancing entry limit. During 1990 - 95 the limit

increased, on an average, by 4.3% each year[22]. This average must replace the value of r_{gyC} in our model to give us r_{gC} = 5.03% for the 'catching up' exercise.

If we put 0.0503 for 0.026 as the value of r_{gC} in our calculations, the 'catching up' period is lengthened to 68 years. The solution, to remain meaningful, lies in Malaysia raising the GNP growth rate in real terms beyond 8.2% a year, or reduce its growth of population drastically, or work on both the fronts. Reduction in population growth has social barriers. Otherwise also, the economy is labour-starved: the scope for taking action on the population front is very limited. So, for success, speeding up growth alone offers some hope. To find out the required GNP growth, in a given time frame, e.g. n = 25, we may rewrite the model as under:

$$b_{gM} = b_{gC} + b_{pM} - b_{pC} + (a_C - a_M)/n \qquad \text{(xii)}$$

Solving the above equation for b_{gM}, with n = 25, we find that the Malaysian GNP must grow unabated at no less than 10.6% a year in real terms until 2020 to enter the 'High Income' classification, the assumptions of the model remaining intact.

6. CONCLUDING REMARKS

To grow at 10.6% is indeed, a tall order, especially because the time span for sustaining it is too large, about quarter of a century. Notice that the period 1990 - 95 from which various values have been extracted to produce the results in the section above was perhaps among the most favourable ones for Malaysia, and a rather 'disturbed' one for many of the economies in the 'High income' bracket. Also, the assumptions underlying the model are likely to change, at least for the near future, unfavourably for Malaysia. Growth rates are looking up in many 'High Income' economies, while things for Malaysia are becoming less rosy. Foreign savings that supplemented domestic resources to boost development in the past[23] may not return soon to assume the same role after the current large and sudden withdrawals. The emergence of new and greener pastures for investment elsewhere in Europe, Africa, and Asia cannot be ignored. The depreciation of Ringgit in recent months may turn out to be sticky; a return to old levels may not be fast. Cheaper Ringgit is likely to boost exports, but the advantage shall be neutralized to the extent production of export goods requires imported inputs that now become costlier. Such input requirements are not meagre. Restrictions on imports are being imposed. The postponement/delaying of some mega projects has already been announced. A slowing down of the economy is inevitable. Inflationary pressures may increase.

However, the slowing down, albeit an adverse factor, is a non-issue in the present context. Our results clearly show that even if Malaysia could continue to maintain her present pace of economic growth, catching up with the West is not a goal worth chasing. Its relentless pursuit seems to have created not a few pitfalls in the way of progress proving more ameliorating. The openness of the economy is increasing: the ratio of trade volume to GDP moved from 113 in 1980 to 194 the third highest among the developing economies in 1995[24]. The terms of trade are moving against the country: the index

moved from 114 in 1985 to 92 in 1995 with base 1987 = 100. Again, it is no accident that while the GNP per capita rank of the country climbs up, its Human Development Index rank slips down from 53 in 1992 to 60 in 1994. Labour productivity in relative terms tends to decline.[25] Also, fast growth is accompanied with increasing income inequalities[26]. The Gini coefficient is among the highest for developing countries[27]. And, to be effective, environmental care should be internal to the vision of development, its goals, and strategies.

Thus, per capita GNP growth may be of paramount importance for catching-up with the West in economic development, no less important is how growth is brought about and how its fruits are distributed. The present crisis in the financial markets of the country provides a breathing space to have a hard look at such issues and reconsider her developmental priorities, extent of external dependence, and resource allocation. The impending slow down may prove a blessing in disguise in this context.

END NOTES

1. An account of some important models is available in Section 6 of Agrawal and Singh. See also readings under XI C in Meier. Interestingly, the discussion on planning models does not appear in the book's latest edition (1995).
2. Myint PP. 1-2. His point is this: If the GNP per capita in country A were $30,000 a year and it increases by 2% to become $30,600, while the per capita GNP of country B rises from, say, $3000 by 10% to reach $3,300, the gap between the average yearly GNP of the two countries widens from $27000 to $27,300 despite its rate of growth being in B 5 times of that in A.
3. Vision 2020 was expounded by the Prime Minister in his working paper entitled "Malaysia: The Way Forward" which he delivered at the inaugural meeting of the Malaysian Business Council on 28th February 1991.
4. See Table 1 in each of the World Development Reports 1989 and 1997.
5. Table A-3 P.149 World Development Report, 1995.
6. This is in contrast to the neoclassical growth models that, in the Solovian tradition, rest on the assumption of common technology: the economies are driven by forces of growth independently and tend to converge to the same steady state.
7. Gerschenkron provides the most well known description of the challenges and benefits of backwardness in the case of the latecomers to industrialization in Europe. Also, see Meier PP. 101-110.
8. Dowrick and Nguyen provide an account of the convergence of these economies.
9. Targetti and Foti, Ben-David, and WDR 1995 (P. 49) make the point.
10. On this, a detailed and interesting discussion is available in Baumol et al.
11. Baumol et al provide supportive evidence on the point while Ben- David questions its validity.
12. A neat summary of the debate is given in WDR 1995 P. 49.
13. Ibid. The ratio advanced to fifty-eight in 1995
14. Vision 2020 did realize that GNP per capita was not a perfect unit for measuring the development status of a country, but "in order to quantify we should like to double

our per capita income every 10 years and it is calculated that if we achieve an average growth of 7% per year then we will be able to achieve an 800 percent growth over a period of 30 years and this would mean that we have the status of a developed country". (National Seminar Proceedings P.60).

15. The coefficient of rank correlation between Human Development Index (HDI) and GNP per capita for the developing countries is found to be + 0.88, + 0.86, and + 0.89 for the years 1992, 1993, and 1994 respectively.
16. The Human Development Reports of UNDP do give lists of Developing Countries and Industrial Countries but do not provided the basis of division.
17. For interesting revelations compare the list of Industrial Countries in Human Development Reports with the list of High Income Countries in the World Development Reports. Many countries included in the former list appear in the Lower Income groups in the latter.
18. The explanation here combines those provided in the WDR 1992 P. 287 and WDR 1997 P. 262.
19. The GNP figures used in these reports for various countries including Malaysia are not deflated by an appropriate local price index, but by a `relative' `measure' of inflation as explained above.
20. The assumption takes care of the imprecision introduced in the GNP per capita as measure of development stated in Vision 2020. See National Seminar Proceedings PP. 60, 106.
21. Vision 2020 fixed the achieving of an annual GNP per capita target equal to US$10,000 in 30 years to attain a developed nation's status. (National Seminar Proceedings P. 60). This the country could reach, as we have shown, provided the assumptions made remained intact. However, to be in a `catching up' race is a different proposition: Malaysia must chase an ever-advancing GNP per capita target to enter the `High Income' club. When Malaysia possibly reaches the GNP per capita of US $ 10,000 in 2020, this target would perhaps have already crossed US $ 20,000 per annum. The two postulates do not go together.
22. The minimum GNP per capita requirement for entry into the `High Income' group increased over the years as under:

Year	1990	1991	1992	1993	1994	1995
GNP per capita US dollars	7620	7911	8336	8625	8956	9386

23.

Years	Domestic Savings	Aggregate Net Resource Flows	Net Private Capital Flows
	Percent of GDP		
1980	33	8.7	7.8
1995	37	14.7	14.0

24. World Development Report 1997, Table 3.
25. See Targetti and Foti T.4 P. 38.
26. Hasan P. 23.
27. The Gini coefficient based on 1989 income distribution survey was 48.4 for Malaysia. Only 16 countries out of 63, for which information is available in World Development Report 1997, Table 5, had a higher coefficient. Of the 16, only 3 are Muslim countries.

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